

CLEANING HEAD FOR ELECTROMECHANICAL TOOTHBRUSH

TECHNICAL FIELD OF THE INVENTION

This invention relates to electromechanical actuated toothbrushes.

BACKGROUND ART

A typical prior art cleaning head for an electromechanical toothbrush is disclosed in U.S. Pat. No. 6381734 IPC A46B 13/02, issued May 12, 2002. Another typical prior art cleaning head for a mechanical toothbrush is disclosed in U.S. Pat. No. 6401288 IPC A46B 13/02, issued Jun. 11, 2002. Both cleaning heads consist of a rod, one end of which is splitting in two parts. At the end of each part one brush head is rigidly fixed. Both brush heads mentioned above are arranged in such a way that its bristles are directed towards each other at an angle of 70-80 degrees.

A disadvantage of that cleaning heads is lack of tooth cleaning quality, since it is hard for a customer to set the device optimal way by sensations in a mouth cavity to make bristle's cleaning plane coincide with set of teeth plane. This is caused by lack of a possibility of brush heads to rotate on a plane parallel to a bearing rod, on which brush heads are fixed. Due to that brush heads that are not set optimally towards a set of teeth do not ensure qualitative tooth cleaning by moving them along a set of teeth. That also brings discomfort when using a toothbrush during its movement by a set of teeth.

Most close to a proposing invention on a technical essence and a solving problem is SG-8001 cleaning head for electromechanical toothbrushes type "CD" or "GD", made by Ninghai Maidigg Model and Plastics Co. Ltd. (Peoples Republic of China, <http://www.maidigg.com>). Said cleaning head is disclosed in U.S. Pat. No. 5171066, issued Dec. 15, 1992. That cleaning head consists of a bearing rod, one end of which is splitting in two parts. On a splitted end of a bearing rod U-shaped plate, on an internal surface of which

bristles are attached, is rigidly fixed. A size of a cleaning head allows it to enter mouth cavity easily and to attach it to a set of teeth, completely enveloping a surface of 2-3 teeth.

A disadvantage of a known cleaning head is also lack of tooth cleaning quality, since it is hard for a customer to set the device optimal way by sensations in a mouth cavity to make bristle's cleaning plane coincide with set of teeth plane. This is caused by rigid fixing of a U-shaped plate on an end of the bearing rod. Due to that cleaning head cannot rotate on a plane parallel to the bearing rod, on which it is fixed. This causes inconvenience when using a toothbrush during its movement towards a set of teeth and requires a special skill from a consumer and also causes raising of traumatizing of a gum during brushing because of distortion of a longitudinal axis of a cleaning head against the set of teeth and thus rise of zones of too heavy stress on a gum.

DISCLOSURE OF THE INVENTION

A main aim of the present invention is to deliver a cleaning head for an electromechanical toothbrush with advanced quality of tooth cleaning as a result of free rotation of U-shaped plates provided with bristles on a plane parallel to a bearing rod.

In addition, proposed construction of a cleaning head for an electromechanical toothbrush improves efficiency of tooth cleaning.

Present problem is solved in a following a way: a cleaning head for an electromechanical toothbrush comprising bearing rod and U-shaped plate, provided with bristles on the internal surface thereof and fixed to the end of said rod, also comprises a second U-shaped plate, similar to the first one, disposed in a mirror manner with respect to the first one, and bottoms of U-shaped plates are connected by an axis penetrating through a

shaped slot to a flat section embodied on the end of the bearing rod in the perpendicular direction of the axis thereof.

It is efficient to arrange bristles on exchangeable tie-plates, fixed on internal surfaces of the U-shaped plates.

For the purpose of fixation the exchangeable tie-plates, provided with bristles, on the internal surfaces of the U-shaped plates, said tie-plates can be provided with lugs inserting in slots specially designed in sides of U-shaped plates.

It is efficient to make shaped slot to a flat section embodied on the end of the bearing rod in the shape of a keyhole with an open outside part.

An axis penetrating through a shaped slot connects the bases of the U-shaped plates.

During a tooth cleaning a free rotation of the U-shaped plates on a plane parallel to the bearing rod aligns both U-shaped plates and exchangeable tie-plates provided with bristles towards a set of teeth because of an axis connecting the U-shaped plates and penetrating through a shaped slot to a flat section embodied on the end of the bearing rod. Thus the U-shaped plates monitor a direction of the set of teeth ensuring the most efficient tooth cleaning.

Simultaneous brushing of upper and lower teeth ensures improving of efficiency of tooth cleaning.

The shaped slot is made in the shape of the keyhole with the open outside part of the flat section embodied on the end of the bearing rod ensures an easy assembling of the cleaning head and changeability of the U-shaped plates and the axis.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is the cleaning head of an electromechanical toothbrush in a disassembled mode.

FIG. 2 is the cleaning head of an electromechanical toothbrush in an assembled mode.

AN EXAMPLE OF CARRYING OUT THE INVENTION

The cleaning head of an electromechanical toothbrush (FIG. 1) consists of bearing rod 1 with a flat section 2 on its end and two U-shaped plates 3, connected by an axis 4, penetrating through shaped slot 5 to a flat section 2 of the bearing rod 1. On internal surfaces of the U-shaped plates 3 exchangeable tie-plates 6 provided with bristles are fixed, for the fixation of said tie-plates lugs 7 inserting in slots 8, specially designed in sides of the U-shaped plates 3, are made. In the FIG. 2 arrows show possible directions of the cleaning head movement during a tooth cleaning.

The cleaning head for an electromechanical toothbrush works the following way.

The cleaning head is connected to a toothbrush handle and is placed in a mouth cavity in such a way that crownwork of upper and lower teeth opposed to each other are situated between the bristles simultaneously. Then an electric drive is switched on. During a tooth cleaning the cleaning head can make any of movements shown in FIG. 2: transverse movements, oscillatory movements, reciprocal movements, "picking" movements, or all the movements at the same time, depending on a type of the electric drive. Those movements are delivered to the bristles, which clean crownwork surfaces, thus cleaning dental plaque. For cleaning of interdental space transverse and oscillatory movements are the most efficient ones. During gradual advancing of the cleaning head along a set of teeth both U-shaped plates 3 and, accordingly, exchangeable tie-plates 6 provided with bristles orientate along an axis of the set of teeth, which is ensured by free rotation of the axis 4 in the shaped slot 5.

Hence, both U-shaped plates, rigidly connected by the axis 4, monitor a direction of the set of teeth, and it is not necessary for the customer to do that. This ensures not only high-

quality tooth cleaning, but also its simplicity of operation and comfort, and also prevents traumatizing of a gum. It is fundamentally important that the cleaning head at the expense of its construction ensures most proper tooth cleaning, without requiring special skills in tooth cleaning from the customer.

COMMERCIAL PRACTICABILITY

Tests of the cleaning head for an electromechanical toothbrush were carried out on 10 volunteers, 8 of which had high gum vulnerability. All of them used the cleaning head of the proposed construction in the course of the month twice a day, 2-3 minutes in the morning and evening.

Tests proved that the volunteers liked the simplicity and mercifulness of the tooth cleaning procedure and also the fact that the cleaning head does not induce any gum bleeding. All of the volunteers mentioned high quality of the interdental space cleaning and pleasurable sensation of a gum massage.

Hence, the proposed construction of the cleaning head for an electromechanical toothbrush ensures high-quality tooth cleaning because of free rotation of the U-shaped plates provided with the bristles arranged on a plane parallel to the bearing rod.

Simultaneity of cleaning of the upper and lower teeth ensures improvement of efficiency of the whole procedure.